

What is claimed:

1.- A rearview mirror assembly of an automotive vehicle with a flashing device of the type comprising a rearview mirror housing (1) with a first opening (3) in which the said rearview mirror (14) is arranged and a second opening (4) defined in at least part of the rest of the outer perimeter of said housing (1), which is in the part opposite to the first opening (3), characterized in that it further comprises:

- an outer module (5) which can be coupled to said housing (1) closing said second opening (4), said module (5) defining inwardly an elongated passage (7) delimited between two walls, an inner wall (15) and an outer wall acting as a cover (8) which is at least partly transparent, said elongated passage (7) defining a path, and

- a double-sided printed-circuit board (9), at least partly rigid, including at least one light emitting component (10, 11) in each of its sides C1, C2, said board (9) being electrically connected to a feed and control system located inside said automotive vehicle, and located perpendicularly and transversely with respect to said elongated passage (7), dividing the latter into two areas (7a, 7b), a rear area (7a) with respect to the direction of travel extending from said board (9) to an end area (7a1) adjacent to the rearview mirror and visible together with the latter, and a front area (7b) formed by the rest of the elongated passage (7) such that one of said at least two light emitting components projects light along said rear area (7a), this light exiting by said end area (7a1) of the rear area (7a) of said elongated passage (7) with desired horizontal (H) and vertical (V) angles through a transparent portion (8a) of said cover (8), and at least another (11) of said two light emitting components located in the other side (C2) of said printed-circuit board (9) projects light along said front area (7b), this light exiting through said cover (8).

2.- A rearview mirror assembly of an automotive vehicle with a flashing device, of the type comprising a rearview mirror housing (1) with a first opening (3) in which said rearview mirror (14) is arranged and a second opening (4) defined in at least part of the rest of the outer perimeter of said housing (1), which is in the part opposite to the first opening (3), characterized in that it further comprises:

- an outer module (5) which can be coupled to said housing (1) closing said second opening (4), said outer module (5) defining inwardly an elongated passage (7) delimited between two walls, an inner wall (15) and an outer wall acting as a cover (8) which is at least partly transparent, said passage defining a path, and

- a double-sided printed-circuit board (9) including at least one light emitting component (10, 11) in each of its sides C1, C2, said board (9) being electrically

connected to a feed and control system and located transversely with respect to said elongated passage (7), dividing the latter into two areas (7a, 7b), a rear area (7a) with respect to the direction of travel extending from said board (9) to an end area (7a1) adjacent to the rearview mirror and visible together with the latter, and a front area (7b) formed by the rest of the elongated passage (7) such that one (10) of said at least two light emitting components projects light along said rear area (7a), this light exiting by said end area (7a1) of the rear area (7a) of said elongated passage (7) with desired horizontal (H) and vertical (V) angles through a transparent portion (8a) of said cover (8), and at least another (11) of said two light emitting components located in the other side (C2) of said printed-circuit board (9) projects light along said front area (7b), this light exiting through said cover (8).

3.- A rearview mirror assembly of an automotive vehicle with a flashing device of the type comprising a rearview mirror housing (1) with an opening (3) in which said rearview mirror (14) is arranged, characterized in that at least part of the rest of the outer perimeter of said housing (1), which is in the part opposite to said opening (3), is depressed towards the inside of the housing (1), defining an elongated passage (7) delimited between an inner wall (15) of said recess and an outer wall acting as a cover (8) which is at least partly transparent, said elongated passage (7) defining a path and in that it further comprises:

20 - a double-sided printed-circuit board (9) including at least one light emitting component (10, 11) in each of its sides C1, C2, said board (9) being electrically connected to a feed and control system and located transversely with respect to said elongated passage (7), dividing the latter into two areas (7a, 7b), a rear area (7a) with respect to the direction of travel extending from said board (9) to an end area (7a1) adjacent to the rearview mirror and visible together with the latter, and a front area (7b) formed by the rest of the elongated passage (7) such that one (10) of said at least two light emitting components projects light along said rear area (7a), this light exiting by said end area (7a1) of the rear area (7a) of said elongated passage (7) with desired horizontal (H) and vertical (V) angles through a transparent portion (8a) of said cover (8), and at least another (11) of said two light emitting components located in the other side (C2) of said printed-circuit board (9) projects light along said front area (7b), this light exiting through said cover (8).

4.- An assembly according to claim 1, 2 or 3, characterized in that said elongated passage (7) follows a curved path in at least part of said rear area (7a).

35 5.- An assembly according to claim 4, characterized in that it comprises compensation optical means allowing, when due to said curved path of at least part

of said rear area (7a) of the elongated passage (7), the light projected by the light emitting component (10) does not directly exit by said end area (7a1) of the elongated passage (7) with said desired horizontal (H) and vertical (V) angles, to divert said light so that it exits by said end area (7a1) with said desired horizontal
5 (H) and vertical (V) angles through said transparent portion (8a) of said cover (8).

6.- An assembly according to claim 5, characterized in that said compensation optical means comprise at least a hollow transverse channel (16) of prismatic geometry located approximately in the point of tangency of the light projected by the light emitting component (10), from the geometric centre thereof, with the inner
10 surface (15i) of said inner wall (15).

7.- An assembly according to claim 6, characterized in that said compensation optical means further comprise a thickened portion (17) of the cover (8) from said transverse channel (16) to the end of the cover (8).

8.- An assembly according to claim 5, characterized in that said compensation
15 optical means further comprise reflector elements arranged in at least part of the inner surface (15i) of the inner wall (15) delimiting said elongated passage (7) in said rear area (7a).

9.- An assembly according to claim 1, 2 or 3, characterized in that said double-sided printed-circuit board (9) includes two light emitting components (10,
20 12) in at least one of its sides (C1).

10.- An assembly according to claim 9, characterized in that said light emitting components (10, 12) are placed on said printed-circuit board (9) in a certain manner in relation to the elongated passage (7) so that, in combination with some emission characteristics thereof, they project light outside with said desired
25 horizontal (H) and vertical (V) angles.

11.- An assembly according to claim 10, characterized in that it additionally comprises optical means which, independently or in collaboration with said certain manner in which the light emitting components (10, 11, 12) are arranged and the mentioned emission characteristics thereof, make the light emitting components (10,
30 12) of one of the sides (C1) of the printed-circuit board (9) project light outside backwards with said desired horizontal (H) and vertical (V) angles, and the light emitting component (11) of the other side (C2) project light forwards, the light passing through said optical means in both cases.

12.- An assembly according to claim 11, characterized in that said desired horizontal angle (H) is equal to or greater than 55° and said desired vertical angle (V) is equal to or greater than 25° .

5 13.- An assembly according to claim 10, characterized in that said two light emitting components (10, 12) of said side (C1) of the printed-circuit board are spaced and located one above the other with respect to a vertical plane.

14.- An assembly according to claim 13, characterized in that said two light emitting components (10, 12) of said side (C1) of the printed-circuit board are spaced and separated from one another with respect to a horizontal plane.

10 15.- An assembly according to claim 11, characterized in that said light emitting components (10,11, 12) are LEDs.

16.- An assembly according to claim 1, 2 or 3, characterized in that said printed-circuit board (9) includes a circuitry for protecting said light emitting components (10, 11).

15 17.- An assembly according to claim 16, characterized in that at least said protection circuitry is formed by at least some resistances arranged in the printed-circuit board (9) by carbon or graphite laydown.

18.- An assembly according to claim 11 or 15, characterized in that said optical means comprise plastic parts acting as optics.

20 19.- An assembly according to claim 18 when it depends on claim 15, characterized in that said plastic parts acting as optics are at least one lens which forms part of the LEDs themselves and/or is arranged thereupon after the injection of the lens in an insulating material likewise injected on the printed-circuit board (9), thus forming a type of tablet.

25 20.- An assembly according to claim 18, characterized in that said plastic parts form at least part of said cover (8) and are at least one lens and/or configurations of a prismatic geometry.

21.- An assembly according to claim 18, 19 or 20, characterized in that said optical means further comprise reflector elements arranged in at least part of the
30 inner surface (15i) of the inner wall (15).

22.- An assembly according to claim 1, 2 or 3, characterized in that said printed circuit board (9) is completely rigid.

23.- An assembly according to claim 1, 2 or 3, characterized in that said printed-circuit board (9) comprises a connector (13) which can be coupled to

another corresponding connector located in said outer module (5) or in said depressed perimeter of said housing (1), thus carrying out the mentioned electrical connection with said feed and control system located inside said automotive vehicle.

24.- An assembly according to claim 9, characterized in that said printed-circuit board (9) comprises means for protection against weathering.

25.- An assembly according to claim 24, characterized in that said means for protection are preferably materialized in the form of at least one material of those included in the group formed by: epoxy resin, polyamide, thermoplastic polyurethane, thermoplastic elastomer and rubber.

26.- An assembly according to claim 25, characterized in that said material coats at least part of said printed-circuit board (9).

27.- An assembly according to claim 26, characterized in that said material coats the whole printed-circuit board (9) except the areas occupied by the light emitting components (10, 11, 12).

28.- An assembly according to claim 1, 2 or 3, characterized in that it comprises a circuit (30), arranged along at least one of said two areas (7a, 7b) of said elongated passage (7), so as to at least electrically connect said feed and control system with the printed-circuit board (9).

29.- An assembly according to claim 28, characterized in that said circuit (30) includes a circuitry for protecting and/or polarizing said light emitting components (10, 11).

30.- An assembly according to claim 29, characterized in that said circuitry for protecting and/or polarizing is formed by a series of electronic components among which there is at least one of the group formed by: resistances and diodes

31.- An assembly according to claim 30, characterized in that said circuit (30) is supported by a flexible board (20) with a first end (20a), near which said printed-circuit board (9) is connected, and a second distal end (20b) near which said electronic components are arranged.

32.- An assembly according to claim 31, characterized in that said flexible board (20) comprises a connector (13a) which can be coupled to another corresponding connector electrically connected with said feed and control system, to feed and control said light emitting components (10, 11).

33.- An assembly according to claim 31, characterized in that said flexible board (20) and/or said circuit (30) are formed or coated at least partly by a good heat sink material.

5 34.- An assembly according to claim 1, 2, 3 or 33, characterized in that said printed-circuit board (9) and/or said flexible board (20) comprise an intermediate electrically insulating dielectric layer of low thermal impedance electrically connected to said light emitting components (10, 11) and/or to said circuit (30) and joined to a metallic substrate in order to dissipate the heat from said light emitting components (10, 11) and/or said circuit (30).

10 35.- An assembly according to claim 31, characterized in that said flexible board (20) and/or said circuit (30) and/or said printed-circuit board (9) are connected to a heat sink element.

36.- An assembly according to claim 31, 32 or 33, characterized in that said flexible board (20) is double-sided.

15 37.- An assembly according to claim 1, 2 or 3, characterized in that said inner wall (15) defines an opening (23) for introducing said printed-circuit board (9).

38.- An assembly according to claim 37, characterized in that it comprises a support and positioning semi-capsule (24) for carrying the printed-circuit board (9) and facilitating its positioning inside said elongated passage (7) in the mentioned position when said board (9) is at least partly introduced through said opening (23), said semi-capsule (24) being outside said elongated passage (7) covering said opening (23).

20 39.- An assembly according to claim 38, characterized in that said semi-capsule (24) comprises holding means to hold said printed-circuit board (9) by an end portion (9a).

40.- An assembly according to claim 39, characterized in that said holding means comprise at least one elastic tab (25) with a configuration which can collaborate with a complementary configuration thereof arranged in said end portion (9a) of said printed-circuit board (9).

30 41.- An assembly according to claim 40, characterized in that said holding means comprise two elastic tabs (25) with respective configurations each of which comprise a boss (25a) in the end of each tab (25) faced towards the inside of the semi-capsule (24) to hold the printed-circuit board (9) like a clamp by two complementary configurations arranged in said end portion (9a) of said printed-circuit board (9).

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42.- An assembly according to claim 39, characterized in that said holding means comprise a configuration (26) for housing by coupling tightly said printed-circuit board (9) by said end portion (9a).

5 43.- An assembly according to claim 38, characterized in that said semi-capsule (24) comprises through holes (27) in its base (24b) for the passage of a portion of metallic pins (28) connected to said printed-circuit board (9) to make the mentioned electrical connection with said feed and control system possible.

10 44.- An assembly according to claim 38, characterized in that said semi-capsule (24) has a perimetric edge (29) along the outline of an open side (24a) adapted to achieve its fixing to the outer surface (15e) of the inner wall (15), around said opening (23).

45.- An assembly according to claim 44, characterized in that said perimetric edge (29) is adapted such that said fixing is produced by means of friction welding.

15 46.- An assembly according to claim 44, characterized in that said perimetric edge (29) is adapted such that said fixing is produced by means of ultrasonic welding.